



## Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact [support@jstor.org](mailto:support@jstor.org).

## General Notes.

---

### GEOLOGY AND PALEONTOLOGY.

**Description of a New Genus of Corals, from the Devonian Rocks of Iowa.**—Of the fossil species occurring in the Devonian rocks of Iowa, many of them are as yet new to science, which fact is well shown by my own cabinet of fossils, personally collected from these strata. Also, many species which are described and have long been known to science are, in fact, but very imperfectly known. This is owing more particularly to the insufficiency of material heretofore obtained.

These statements are especially applicable to the coralline forms of nearly all divisions of this formation in the State.

In this paper will be found a description of a few of these corals from the Independence shale and the Rockford shales of Iowa.

*Macgeea*, n. gen.—Corals growing in solitary, cylindrical, sometimes compressed, cup-shape cells; usually from five mm. to forty-seven mm. in length, and calyx from one and a half mm. to eighteen mm. in diameter; slightly curved, externally irregular, usually showing ing evidence of attachment.

Calyx generally as deep as wide, but very rarely being only one-sixth as deep as wide; outer wall thin, rays numerous, from thirty-two to seventy-six in number, alternating in size within the cup.

Costæ (often very strong, and usually alternating in size) continuous with the rays over the edge of the cup and for some distance below the margin; lower down generally interrupted, or covered with a more or less epithecal coat (the epithecal coat is, however, sometimes entirely wanting), showing traces of numerous transverse partitions. Bottom of the cup large, and occupied by a slight depression; rays sometimes very slightly twisted in the bottom of the cup. The rays, and costæ for some distance below the margin of the cup, more or less distinctly denticulate on the edge.

The description of this genus is based almost exclusively upon the species *Pachyphyllum solitarium* of Hall and Whitfield, although made also to include *Macgeea culmula* of this paper. This genus differs conspicuously from the genus *Pachyphyllum* (to which the specimens upon which this generic description is based have been referred by

Hall and Whitfield), as will be readily seen by a comparison of the descriptions of the two genera. This genus is named in honor of Mr. W. J. McGee, of the United States Geological Survey.

*Macgeea solitaria*, H. and W.—*Pachyphyllum solitarium* H. and W., Twenty-third Annual Report of Board of Regents on New York State Cabinet, page 232. The specimens referred to this species are often quite available, and show several important features not mentioned in the original description. The denticulate character of the rays and costæ is most usually observed only in well-preserved specimens.

A critical examination of nearly two hundred specimens of this species reveals that the bottom of the calyx in well-preserved specimens is never occupied by a "slight elevation or columella" but, on the contrary, by a depression, as shown in Plate IX., Fig. 8, of the above-mentioned Report. This feature is the result of weathering.

*Macgeea parva* n. sp.—Coral single, very small, from five to six mm. in length, and from five to six mm. in greatest diameter; sometimes scarcely, and at other times sharply curved; subconical, but at times very strongly produced on the convex side of the cell, thus giving the calyx a distinct ovate marginal outline.

Calyx contracted at the top, about as wide as deep; outer wall of moderate thickness, bottom of the cup large. In the longitudinal section of a single specimen, the bottom was seen to be occupied by a very slight elevation; but whether or not this is a constant feature can be ascertained only by securing a larger number of specimens for examination than has as yet been obtained.

Costæ continuous with the lamellæ over the margin of the cup and for some distance downward; lower down covered by a smooth, perfect epithecal coat, sometimes annulated by fine striæ, of growth; lamellæ and costæ alternately large and small, sometimes slightly denticulate on the edge (the occasional absence of this feature is apparently due to attrition); from thirty-five to forty-two in number.

This species is closely related to *M. solitaria* of the Rockford shales, but differs from that species in its very small size, always continuous, perfect, and much smoother epitheca; the relatively thicker outer wall, as well as the strong constriction of the upper portion of the cell.

Position and locality: Blue shales below the Devonian limestone, Independence, Iowa.

*Macgeea culmula*, n. sp.—Coral small, elongate, cylindrical, slightly contracted and bent in the middle; externally somewhat irregular; calyx small, flattened at the bottom, width and depth about equal, outer wall thin; rays of moderate strength, from thirty to thirty-two in number. Costæ continuous with the rays over the margin of the cup, and for a short distance below; lower down interrupted or covered by a continuous, perfect epithecal coat. Costæ and rays alternating in strength; apparently denticulate on the edge. This feature, however, is not distinctly made out, owing to a slight erosion of the specimen.

The specimen in hand is attached nearly full length to a fragment of *Diphyphyllum*, although not a truly parasitic species. Dimensions: Diameter, four mm.; length, twenty-two mm. Position and locality: Rockford Shales, Hackberry, Iowa.—CLEMENT L. WEBSTER, *Charles City, Iowa*.

**Pohlig on *Elephas Antiquus*.**—Professor Pohlig, of Bonn, gives us the result of his investigations into the characters of *Elephas antiquus* (Falconer), in 260 pages quarto, and ten quarto plates. Especial interest attaches to this species as the ancient representative of the African elephant in Europe, and on account of its annectant character to the typical forms of the genus. Prof. Pohlig has successfully worked out its entire dentition, including the smallest milk-teeth, which are the rarest parts of Proboscidiæ to be found in collections. His material has been mainly derived from the museums of Germany, and of Italy. Particularly useful are his descriptions of the first deciduous molars, and the deciduous superior incisors. Towards the close of the memoir he gives his views as to the phylogeny of the species of *Elephas*. He will not admit that the Africanus group originated from the same type of mastodons as the others; he even believes that it descended from some pre-mastodont genus. We cannot assent to this view, as it is evident that the Tetrabelodons include the possibility of all the species of elephants.

Incidentally Prof. Pohlig expresses his views on other species of the genus *Elephas*. He thinks that a form preceded the *Elephas primigenius* in Europe which was intermediate in characters between it and the *E. meridionalis* (Nesti), which he calls *E. trogontherii*. He regards the *E. hysudricus* Falc. Cautl. as identical with the *E. meridionalis*. He regards the *E. militensis* Falc., *E. mnaidriensis* Leith Adams, and *E. falconeri* Busk, as dwarf forms of *E. antiquus*, due to their restriction to the Mediterranean islands on which they have been found. He also defines a dwarf variety of the mammoth as *E. primigenius*

*leith-adamsii*, the remains of which are found in Germany, and are well represented in the museum of the University of Bonn.

The memoir is a most important contribution to a difficult part of the subject, and will be welcomed by all paleontologists.—E. D. COPE.

**The Cretaceous Formation of S. W. Maryland.**—For many years past the Tertiary formation of this section was an enigma which, under the light of the past, could not be satisfactorily resolved in accordance with the generally accepted theory that where the Tertiary formation was located, there was no other system to be looked for.

That idea has been a stumbling block that but few have been able to get over in a satisfactory manner.

The great cliff at Fort Washington, Prince George's county, has been to the author for the last twenty years a sealed book, an enigma not to be translated by any one, because, surrounded on all sides by Eocene deposits, it gave no sign of Eocene fossils, notwithstanding it stood up to an elevation of from 60 to 65 feet.

But recent ideas suggested by the work and labors of Prof. Wm. B. Clark, of Baltimore, have thrown off the confusion and made that locality readable. Visiting that formation recently we found evidences sufficient to put it down as Cretaceous. At this cliff we found Eocene shells scattered around—not in situ, but amongst the fallen débris—sufficient to prove it was once covered with the Eocene deposit, which is well developed higher up both Swan Creek on the north and Piscataway Creek on the south. We found both fossils, shells, and casts, plants and lignite in the cliff; one plant in my collection could be determined by an expert, from the leaves or parts of leaves which were collected.

A result of the examination of the cliff was the fact that we found it to rest upon a bed of variegated Jurassic clay, from one to two feet above high water mark, in which there is lignite. Further up Piscataway creek we found years ago large coprolites, pieces of bone, sharks' teeth, and palates of sharks, and amber, now in the possession of Mr. Philip Uhler, of Baltimore. We did not then know what these meant, but by the light of to-day we have to admit the formation to be, contrary to the generally received opinion, Cretaceous. The village of Piscataway is upon that formation. The old men of that place informed us that all the wells dug in that village since they could recollect, went down upon and into black micaceous sand and clay, and that they got water at from twelve to twenty feet. Traveling out from thence we found the Cretaceous clays covered with Eocene beds in

every direction ; notably so in Bond's Retreat, Prince George county. The Cretaceous system is found in every deep washout or gully upon Mattawoman Swamp for ten miles above tide water ; the same is true of all the swamps between the Potomac and Patuxent rivers, and doubtless beyond that river. Swainson's Swamp, the dividing line between Charles county and Prince George's county, gives Cretaceous clays overlaid by Miocene deposits ; so does all that horizon. The Eocene and Miocene can be found lapping the Cretaceous in all lower Maryland.

Given these facts, it is in order to ask ; how is it that the Cretaceous has not been better worked up in this region ; and why have the deep cuts failed to give us the remains of some old saurian,—such as *Hadrosaurus* or *Laelaps*. Such a discovery would round out the Cretaceous most grandly, and might bring us out upon the Jurassic with an interest hitherto unknown.

There have been already obtained in this deposit of Maryland from seventy to seventy-five species of fossil shells and casts of shells ; but no fossil plants except the one noted in this paper.

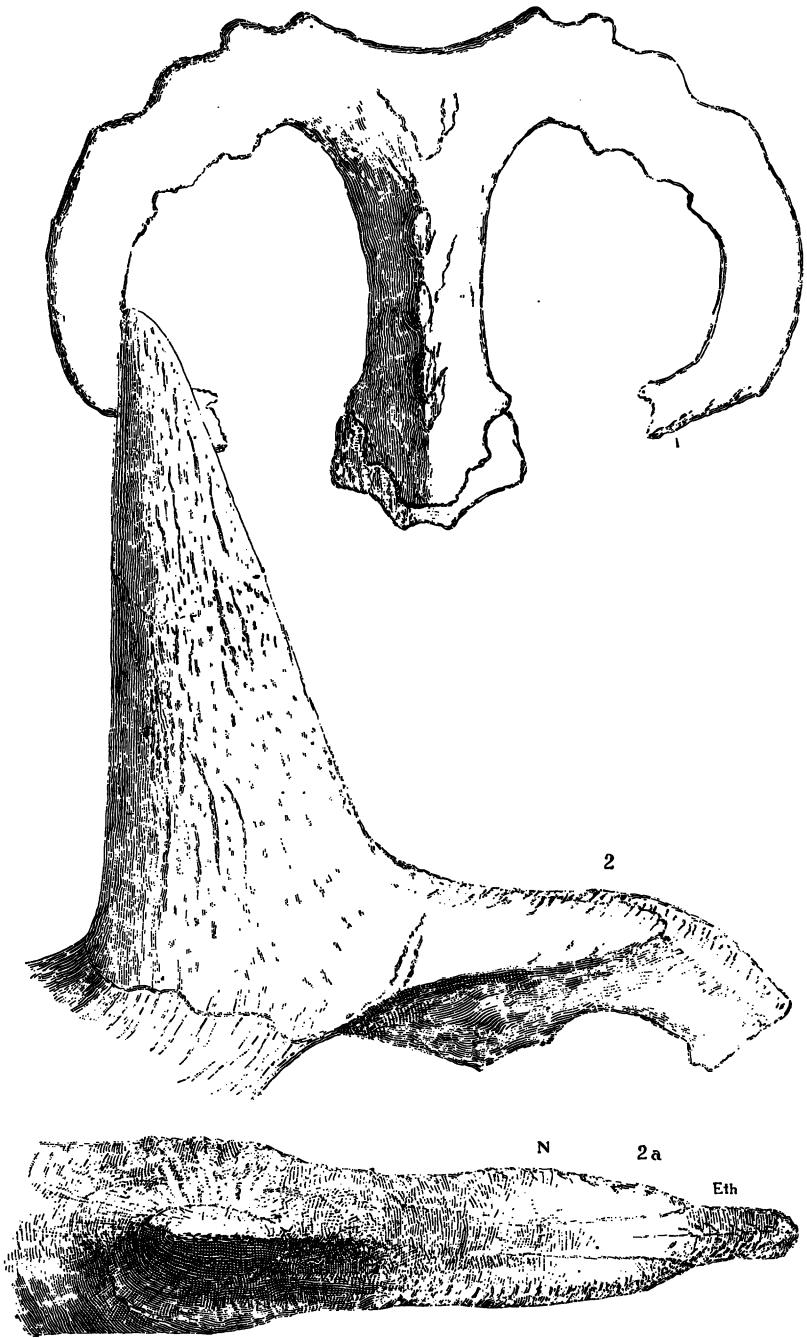
We find but little to say upon the Cretaceous of the Virginia shore of the Potomac. We found upon examination years ago that the Acquia creek sandstone begins below Occoquan Bay, Fairfax county, Va., and runs out at Mt. Vernon, and that upon that formation nowhere upon the Potomac river could we find any other sign of the Cretaceous, except a deposit of very perfect leaves and stems at the White House—no black marl, no Cretaceous shells. That fact made the great cliff at Fort Washington more incomprehensible.

If our diagnosis is correct for the lower formation at Fort Washington—that it is Jurassic—then by a parity of reasoning that formation continues down at least to Smith's Point, Charles county, being occasionally lost below high water, and then rising from two to six feet above it.

In the upper end of Charles county, upon the Potomac river, opposite Mt. Vernon, there are three thousand acres of land, a plateau from one to twenty feet above high tide, surrounded with an amphitheater of hills in which Eocene and Cretaceous are well developed. In the plain below there is no sign of fossils, neither Miocene, Eocene, nor Cretaceous.

To what formation then shall we assign this locality ? If not Jurassic—then, what is it ? All the wells of this particular locality penetrate a variegated clay but no micaceous sand.—OLIVER N. BRYAN, *Marshall Hall, Md.*

PLATE XXXIII.



1. *Monoclonius crassus*. 2. *M. sphenocerus*.

**The Horned Dinosauria of the Laramie.**—Since my last note on this subject (AMERICAN NATURALIST, December, 1888, page 1108), the publication, by Professor Marsh, of a figure<sup>1</sup> of a skull of one of the species, enables me to determine more exactly the affinities of several species of the family which have been in my possession for many years.

The most complete skeleton in my collection is that of the *Monoclonius crassus* Cope.<sup>2</sup> This includes representatives of all the elements excepting the bones of the feet. The posterior part of the skull is preserved, including the left frontal bone. This bears a horn over the middle of the orbit, of small dimensions, and with the apex antero-posteriorly compressed. The parietal bones are enormously expanded, and are interrupted on each side of the middle line by a huge foramen, which causes the remaining parts of the bone to resemble the corresponding parts of *Chamæleó*, depressed in a horizontal plane. The squamosals are lateral, and consist of a wide plate with convex external border with a slightly undulating outline. The ilium is remarkably elongate, both anterior and posterior to the acetabulum, appropriate to the ten vertebræ which constitute the sacrum. It and the sacrum resemble very closely those of the *Agathaumas sylvestre* Cope,<sup>3</sup> which fact, with the evidence derived from the other vertebræ, leaves no doubt that the *Agathaumas* is to be referred to the family of horned herbivorous Dinosauria, with *Monoclonius* and *Polygonax*. This family is called by Marsh the *Ceratopsidæ*; but as it is not certain that *Ceratops*, Marsh, is distinct from one of the genera previously named, I shall call it the *Agathaumidæ* (or *hellenicé Agathaumantidæ*), from the longest known genus, *Agathaumas*.

The characters of *Polygonax* Cope are not yet fully known. The frontal horns of the typical species, *P. mortuarius*<sup>4</sup> Cope, are long and slender, while those of the known species of *Monoclonius* are shorter and robust, and there is a large nasal horn. The *Agathaumas sylvestre* is the largest of the species.

I now give a list of the species of this family known to me :

<sup>1</sup> *American Journal of Science and Arts*, December, 1889.

<sup>2</sup> Proceedings of Academy, Philadelphia, October, 1876. AMERICAN NATURALIST, 1886, page 154.

<sup>3</sup> Proceedings of American Philosophical Society, 1872, page 482; Cretaceous Vertebrata of the West, 1875, page 54, plates v, vi.

<sup>4</sup> Bulletins U. S. Geological Survey Terrs., 1874, April; Cretaceous Vertebrata of the West, 1875, page 63, plates II., III.



AGATHAUMAS SYLVESTRE Cope, l. c.

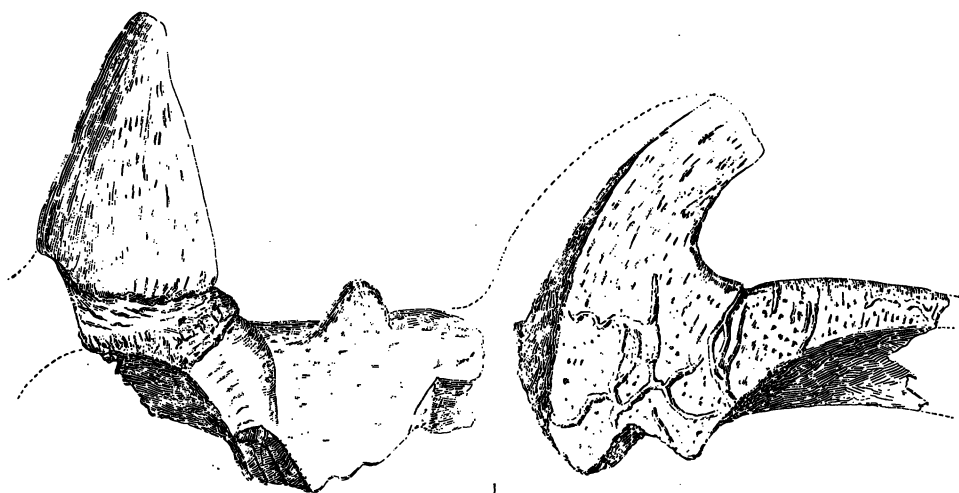
POLYONAX MORTUARIUS Cope, l. c.

MONOCLONIUS RECURVICORNIS Cope, sp. nov. Dinosaurian Cope (Bulletin U. S. Geological Survey Terr. III., 1877, page 588; plate 34, figures 7 and 8.)

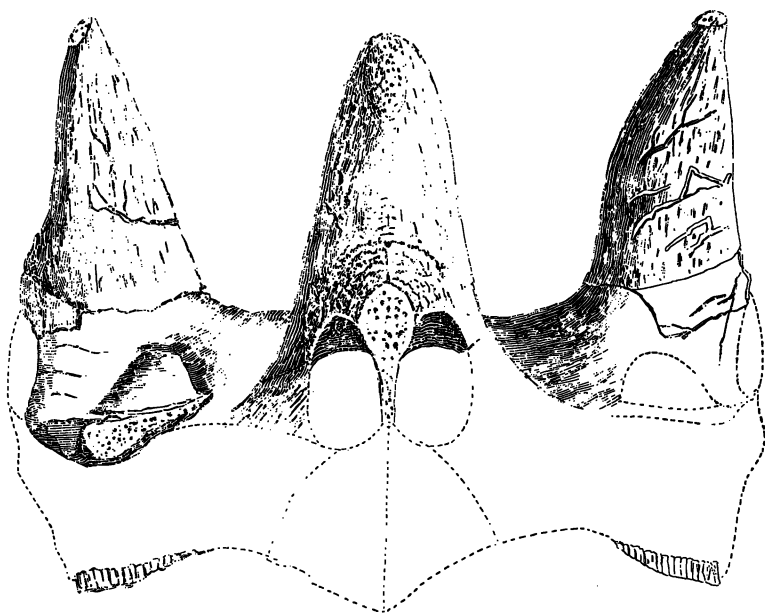
I excavated the bones of the skull of this species in Montana, and described them as above; but suspecting that they might belong to some of the species already known, I did not name them. The fortunate discovery by Prof. Marsh enables me to determine them. The supraorbital horns are robust, straight, and rather short. Their section is an anteroposterior oval at base, and at the middle rounded subquadrate. The nasal bones are wedge-shaped and much narrowed forwards; they support a coössified median septum below. Superior face rounded, very rugose. Some distance posterior to the apex they support a very robust horn, which is compressed and turned abruptly forwards at the apex. Posterior face injured. Length of supraorbital horn 210 mm., long diameter at base 115 mm.; width of nasal bone at base of horn 100 mm.; diameter of nasal horn at base (transverse) 95 mm.; elevation (on curve) to broken apex, 115 mm. Between the supraorbital horns on each frontal bone a low tuberosity. This was a colossal animal and of peculiar characters. The squamosal is narrower than in *M. crassus*, and had marginal tuberosities.

MONOCLONIUS SPHENOCERUS Cope, sp. nov., represented by numerous parts of the skeleton, including parts of the skull, which were found by Charles H. Sternberg, on the Missouri River, near Cow Island, in 1876. The end of the muzzle is preserved, and presents characters which show that the species is quite different from the one last described. The nasal bones are greatly produced to form a slender, compressed, decurved apex, with a prolongation of the inferior median ethmoid septum. The superior face is round in the transverse section, and is rugose. At a long distance behind the apex the nasal horns rises. It is compressed and vertical in direction, and was not less than 250 mm. in length, but the apex I have not yet found in the packages. Supraorbital horns unknown. The nasal bones are narrower at the base of the horn than in the *recurvicornis*, and the horn is of different form. The anterior border converges regularly to the posterior, and its anterior edge is acute for the distal half. Length of nasals in front of horn, 255 mm.; transverse diameter of nasals below at base of horn, 70 mm.; diameters of base of horn, anteroposterior, 160 mm.; transverse, 60 mm.

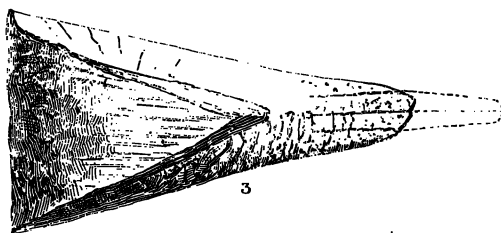
PLATE XXXIV.



1



2



3

*Monoclonius recurvicornis.*

The *Monoclonius sphenocerus* is an animal of large size, exceeding the rhinoceros in height, and the nasal horn is the most formidable weapon I have observed in a reptile.

It may be that the two species last described belong to *Agathaumus*, as the cranial characters of that genus are not known.

MONOCLONIUS CRASSUS Cope, l. c. Parts of two individuals found together.

MONOCLONIUS FISSUS Cope, sp. nov.

Founded on a squamosal bone of an individual of much smaller size than those above described. The suture with the parietals is relatively shorter than in the *M. crassus*, occupying only the distal third of the margin. The plate anterior to the transverse suture for the quadrate is more nearly in one plane, is wider in relation to its length, and has a squamosal sutural surface, and a transverse groove not seen in the *M. crassus*. The excavation posterior to the process which joins the quadrate is deeper. External border mostly lost. Total length 180 mm. ; length in front of quadrate suture 50 mm. ; width in front of do. 87 mm. ; width at postquadrate concavity, 62 mm.

#### EXPLANATION OF PLATES XXXIII. AND XXXIV.

Bones of *Agathaumidæ* much reduced.

FIG. 1. Parietal bone of *Monoclonius crassus* one-eighth natural size.

FIG. 2. Nasal and part of ? ethmoid bones of *Monoclonius sphenocerus*; a side view; b from above; two-ninths natural size.

FIG. 3. Part of frontal bone of *Monoclonius recurvicornis* with supraorbital horn, and nasals with horn; profile, two-ninths natural size.

FIG. 4. Front view of supraorbital and nasal horns and adjacent bones of *Monoclonius recurvinostriis*; two-ninths natural size.

FIG. 5. Part of nasal bones of do. with part of median horn, from above; two-ninths natural size.